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State of Utah  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY

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November 6, 1992

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**RECEIVED**

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DIVISION OF  
OIL GAS & MINING

Mr. James A. Smith, Manager  
Tenneco Minerals - Utah  
P.O. Box 2650  
St. George, UT 84770

RE: **Monitor Wells**  
Ground Water Permit UGW530001

Dear Mr. Smith:

We received a letter dated September 14, 1992 from Robert Wilson and a letter dated September 21, 1992 regarding the replacement of upgradient monitoring well UG-1. UG-3 and Quail Spring produce sufficient quantities so that they can be sampled on a regular basis, but neither are located so as to be an ideal upgradient site. Both sites appear to be in the flow system, but are at a greater distance than UG-1 from the leach pads. Earlier deepening of UG-1 did not make the well a producer.

An ideal ground water monitoring program for those type facilities would include both upgradient as well as downgradient monitoring sites. Should constituents at the downgradient sites increase at some future date, it would be of value to know if this occurred also at the upgradient sites. Therefore, we are not recommending abandonment of the upgradient sites.

Since further attempts at locating a suitable monitoring site is not likely to produce better results, we propose, as an alternative, that UG-3 and Quail Spring be considered the upgradient sites. As such, they should be sampled monthly until 12 monthly samples are available, after which time they should be sampled twice yearly, as per the permit. UG-1 should be checked in the spring of each year, and if sufficient water is available, then it should be sampled also.

The ground water permit will need to be rewritten before your mine expansion can be started, at which time our above proposal will be made part of the new permit. When the permit is rewritten, all sites will be considered in recalculating background, and establishing the ground



Mr. James A. Smith, Manager

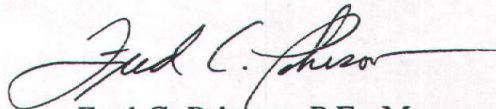
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water classification. Sufficient data should be available at that time so that each downgradient well will have its particular protection level.

If you have comments or questions, please call Mack Croft at 538-6146.

Sincerely,



Fred C. Pehrson, P.E., Manager  
Permits, Compliance & Monitoring Branch

FCP:MC:gt

cc: Div. of Oil, Gas and Mining  
JBR Consultants  
Wayne Thomas

P:TENNECO.WEL  
FILE:TENNECO MINERALS